



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/733,246	12/12/2003	Keiichi Serizawa	246632US2	9473

22850 7590 11/01/2006

C. IRVIN MCCLELLAND  
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.  
1940 DUKE STREET  
ALEXANDRIA, VA 22314

EXAMINER

PHAM, HAI CHI

ART UNIT	PAPER NUMBER
----------	--------------

2861

DATE MAILED: 11/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/733,246	<b>Applicant(s)</b> SERIZAWA ET AL.	
	<b>Examiner</b> Hai C. Pham	<b>Art Unit</b> 2861	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 17 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) 6-18, 21 and 22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 19 and 20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Allowable Subject Matter*

1. The indicated allowability of claim 5 is withdrawn in view of the newly discovered reference to Yamazaki (JP 8-76038). Rejections based on the newly cited reference follow.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-5 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki (JP 8-76038) in view of Matsumoto (JP 2001-174693).

Yamazaki, an acknowledged prior art, discloses an optical scanner in an image forming apparatus comprising a scanning optical system (polygon mirror 4 and f- $\theta$  lenses 5) that forms an optical scanning path, a pair of optical detecting units (pair of photodetectors 25a and 25b) arranged at two positions on the optical scanning path for detecting a write-start position and a write-end position to measure a time for scanning from the write-start position to the write-end position (English translation, paragraph [0003]) (Fig. 5).

Yamazaki teaches the pair of photodetectors being supported by the intermediate members that include the intermediate members (23a-b) and the base

member (21), to be mounted on the printing system, but does not explicitly disclose the optical housing for housing the scanning optical system along with the optical detecting units.

However, it is old and well known in the art that such optical housing is always part of the printing system as evidenced by Endoh, which teaches an image forming apparatus provided with the set of photodetectors (74) mounted on the optical housing (62) through an intermediate member (Figs. 7-9).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide the device of Yamazaki with the optical housing as taught by Endoh since Endoh teaches this to be well known in the art to have an optical box for supporting the optical scanning device.

Yamazaki also fails to teach the intermediate members having a thermal expansion coefficient smaller than that of the optical housing.

Matsumoto discloses a focus detector having the sensor (100) being fixed to the device main body (20) through plural intermediate members (80, 90), wherein the coefficient of linear expansion of the device main body is higher than that of the sensor and the plural intermediate members (see Abstract).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide the intermediate member/mounting substrate with a low thermal expansion coefficient as compared to that of the optical housing to secure the pair of sensors in the device of Yamazaki as taught by Matsumoto. The

motivation for doing so would have been to prevent misalignment of the optical path with respect to the beam-sensing units.

With regard to claims 4 and 20, Yamazaki fails to teach the scanning optical system forming a plurality of optical scanning paths, and the intermediate member being fixed to the image forming apparatus together with the optical housing, by using a mounting member.

Endoh discloses an image forming apparatus comprising an optical scanner (60) having a plurality of semiconductor lasers (18A-D) whose emitting laser beams Lba-LBb form a plurality of optical scanning paths, and photodetectors (74) mounted on the optical housing (62) through an intermediate member and the optical housing being fixed to the frame (48) of the image forming apparatus via fixed parts (68A-D) (Figs. 7-9).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide the device of Yamazaki with a plurality of laser light sources forming a plurality of optical scanning paths as well as the fixed parts for fixing the photodetectors to the image forming apparatus together with the optical housing as taught by Endoh for the purpose of forming a full-color image.

Yamazaki further teaches:

- the intermediate member is mounted on the optical housing at a position having least thermal deforming (the pair of photodetectors are positioned at the image plane far away from the heat-generating sources such as the motor driving the polygon mirror and the laser light source),

- a side of the write-start position of the intermediate member is mounted on the optical housing (the base member being fixed to the optical housing),
- the thermal expansion coefficient of the intermediate member provided for each of the optical scanning paths is made different from each other (in a different configuration as shown in Fig. 2, the photodetector 25a is directly supported by the base member 21 while the other photodetector 25b is supported by the intermediate member 23b, wherein the base member 21 has a coefficient of thermal expansion  $\alpha_1$  smaller than the coefficient of thermal expansion  $\alpha_2$  of the intermediate member 23b) (see Abstract).
- the intermediate member is fixed to the image forming apparatus together with the optical housing, by using a mounting member (the optical housing on which is mounted the substrate 233 is fixed to the frame of the image forming apparatus by screws) (Fig. 15),
- With regard to claim 19, the image carrier, the developing device for forming a toner image from the electrostatic latent image written on the image carrier, the transfer device, and the fixing unit are inherent parts of the image forming apparatus as taught by Yamazaki.

### ***Response to Arguments***

4. Applicant's arguments with respect to claims 1-5 and 19-20 have been considered but are moot in view of the new grounds of rejection.

***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C. Pham whose telephone number is (571) 272-2260. The examiner can normally be reached on M-F 8:30AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vip Patel can be reached on (571) 272-2458. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



HAI PHAM  
PRIMARY EXAMINER

October 27, 2006